XVII. *Ammophila, a new Genus of Inſects in the Claſs Hymenoptera, including the Sphex ſabuloſa of Linnæus. By the Rev. William Kirby, F. L. S.*

Read December 5, 1797.

IN no department of the animal kingdom is the Divine Wiſdom more eminently conſpicuous, than in the conſtruction and œconomy of the inſect tribes; and amongſt theſe, none, perhaps, are more worthy of our attention, on both theſe accounts, than the individuals that compoſe the claſs *Hymenoptera*. Though they do not, like many of the *Coleoptera* and *Lepidoptera*, immediately attract our notice by the brilliancy or gaiety of their colouring (*a*), yet when we examine them cloſely, and obſerve the conſummate ſkill manifeſted in their conſtruction; when we attend to their hiſtory, replete, be they gregarious or ſolitary, with entertaining anecdotes, and furniſhing inſtances of the moſt aſtoniſhing ſagacity and moſt prudent precaution; we feel inclined to prefer the ſtudy of this order of inſects to that of any other, not only as moſt prolific of materials to ſet forth the praiſes of Him who hath created them, which is the firſt duty of the Naturaliſt—but alſo as gratifying, in a

(*a*) Some of them, however, are ſingularly beautiful even in this reſpect. Take for examples the *Tenthredo nitens*, many of the *Ichneumons* of Linnæus's laſt family, and the whole genus *Chryſis*.

high degree, our natural taſte for the inſpection of things that are remarkable either for their beauty, their ſtructure, or their uſes.

Amongſt the parts which diſtinguiſh this claſs of inſects from others, there is none more ſingular, both for its utility and conſtruction, than the tongue and the valves which incloſe and defend it: for this inſtrument is not confined to one or two genera, as ſeems to have been the opinion of Linnæus and the majority of Entomologiſts; but belongs, as I have reaſon to believe in conſequence of repeated diſſections of this part, to a very large majority of the claſs; although in ſome, on account of their diminutive ſize, it may not be viſible, unleſs the eye of the examiner be aſſiſted by a very ſtrong magniſier.

By means of this inſtrument the *Hymenoptera*, I apprehend, contribute very conſiderably towards the depuration of the air; for the ſweets which the flowers would exhale, were it not for myriads of theſe inſects, which feaſt upon their nectar during the ſummer and autumnal months (*b*), would probably render that element impure and unfit for reſpiration (*c*). I have heard of perſons that have been nearly ſuffocated by the odour of flowers placed in their bed-chamber.

This part, ſo important to theſe inſects, will furniſh, I feel perſuaded, a very appropriate character to diſtinguiſh many of the

(*b*) Hymenopterous inſects, eſpecially thoſe that are provided with a ſhort roſtrum, are moſt abundant upon umbelliferous plants. Upon theſe, particularly the *Daucus carota*, the Entomologiſt will find many of the rarer ſpecies of the ſplendid genus *Chryſis*.

(*c*) The wiſdom of Providence has not only been attentive to provide againſt the atmoſphere's being overloaded with ſweets; it has alſo uſed ſimilar precautions to prevent its being corrupted by exhalations of a contrary nature: and to effect this purpoſe, it employs an infinite number of inſects. (Which claſs of animals, in conjunction with the *Fungi*, may be called the depurators and ſcavengers of Nature). Witneſs the myriads to be found in their different ſtates in dung and all putreſcent ſubſtances.

genera

genera in the class, which are now very much confused. This persuasion is the result of an examination of what Fabricius terms the *instrumenta cibaria*, in order to fix upon an essential character, more determinate than the present, for the genus *Apis*. I found that the tongue was of one form in *Sphex*, of another in *Vespa*, and of another still in *Apis*. Amongst the insects which I dissected with this view, was the *Sphex fabulosa* of Linnæus; and I was not a little surprised to find that it was furnished with an inflexed *rostrum* (*d*), which concealed a long, retractile, tubular tongue, with a bifid *clava* at its end (*e*): whereas the tongue of true *Spheges*, such at least as I have examined, is very short, flat, dilated, and nearly entire at the apex (*f*). It agreed with the tongue of *Vespa*, in being divided at the end; but in this latter genus, that part is extremely short and broad, obcordate, very deeply bifid, having its lobes sometimes tipped with a small callous point (*g*). It had a still stronger affinity with that member in *Apis*, especially in those species that have an inflexed *rostrum* (*h*), but in these the tongue is entire, and usually acute. In many other circumstances this insect differs from all those genera, as will appear when I give its natural character.

The possession of three other British species, which agree with this in the peculiar form of the *rostrum* and *maxillæ*, as well as in habit and other circumstances, makes my hesitation the less to consider them as distinct from the genus *Sphex*, and more particularly as Linnæus has placed an insect exhibiting the same characters amongst his *Apes*, under the name of *Apis Ichneumonea*. This will appear, I

(*d*) Tab. XIX. No. I. fig. 4. a. (*e*) fig. 3. (*f*) Tab. XIX. No. II. fig. 2.
(*g*) Tab. XIX. No. III. fig. 2. See also *Reaumur*, Tom. V. Tab. 16. fig. 2. and *De Geer*, Tom. II. Partie II. Tab. 26. fig. 10, 11.
(*h*) Tab. XIX. No. IV. fig. 2.

think,

think, evident to every one who conſults De Geer's figure of that inſect (*i*). Indeed that author deſcribes the roſtrum as having a different direction from that which is mentioned above (*k*), and which is obſervable in all my ſpecies of *Ammophila:* yet ſince he could have no opportunity of examining a recent ſpecimen, (this inſect being a native of South America,) he might very eaſily have been miſled in this point; for the roſtrum readily aſſumes and retains a direction outwards, although its natural poſition when at reſt is inwards.

It is ſingular that ſo attentive and accurate an obſerver ſhould have entirely overlooked this conſpicuous part in *Sphex ſabuloſa,* eſpecially as it had not eſcaped the notice of Linnæus.

I have given this genus the name of *Ammophila,* becauſe thoſe ſpecies with which I am acquainted frequent ſandy banks, particularly ſuch as are expoſed to the ſun.

This is nearly allied to ſeveral genera. The *Sphex ſabuloſa* one would take at firſt ſight for an *Ichneumon,* and Geoffroy (*l*) has ranked it under that genus. It has the antennæ, fierce port, and manners of *Sphex:* its bifid tongue connects it with *Veſpa*; and the inflexed direction and form of the valves of its roſtrum give it an alliance with a large number of *Apes.* On this account I would place it between the two latter genera.

Linnæus, in an admirable "*Methodus demonſtrandi lapides, vegetabilia, aut animalia,*" which I have ſeen at the end of ſome editions of his *Syſtema Naturæ,* under the article *Genus,* lays down the *Character naturalis* as a neceſſary part of it; although he has only given *natural characters* in his *Genera Plantarum.* Fabricius is the firſt Entomo-

(*i*) Tom. II. Partie II. Tab. 32. fig. 13—16.
(*k*) Mem. XII. p. 761.
(*l*) Tom. II. p. 349. n. 63.

logiſt

logist who has drawn out natural characters for insects (*m*). To point out at first those circumstances in which all the individuals of a genus agree, is certainly extremely useful, and spares much unnecessary tautology when we come to describe them. I shall therefore follow his example upon the present occasion.

AMMOPHILA.

Sandwasp.

Character Naturalis.

Caput suborbiculatum, subdepressum. *Rostrum* corneum, inflexum, subulato-conicum(*n*), *vaginâ* trivalvi; *valvulis* duabus superioribus (*o*) semisagittatis medio palpigeris, *palpis* sexarticulatis; inferiori (*p*) apice biaristatâ (*q*), *aristis* membranaceis; *palpis* duobus quadriarticulatis instructâ (*r*); *linguam* submembranaceam, retractilem, tubulosam, subclavatam, *clavâ bifidâ*, exerens (*s*). *Labium* inflexum. *Maxillæ* forcipatæ minaces, apice tridentatæ, dente interiori minimo, intermedio magno truncato, exteriore maximo acuminato (*t*). *Antennæ* filiformes, thorace breviores, sæpiùs tredecim articulorum (*u*), medio frontis insertæ (*v*). *Oculi* ovales, distantes. *Stemmata* in triangulum disposita.

(*m*) Ego primus, in Entomologiâ, characteres naturales composui, introduxi, quibus omne systema niti debet. *Fabric. Philos. Entomol. Hamburg.* 1778, VI. § 28.

(*n*) Tab. XIX. No. I. fig. 4. a. (*o*) fig. 1. (*p*) fig. 2. c.

(*q*) fig. 2. dd. (*r*) fig. 2. e. (*s*) fig. 2. f. and fig. 3. (*t*) fig. 5.

(*u*) The three first joints of the antennæ differ in form from the rest—The first, or *bulb*, is scarcely visible without a magnifier, the second is very large, and the third very small. In one species they consist of fourteen joints.

(*v*) fig. 6.

Collum

Collum infundibuliforme (*w*).

Thorax ſubcompreſſus ponè alarum inſertionem elongatus (*x*). *Scutellum* obſoletum.

Alæ planæ, venoſæ, *anaſtomoſi* obſoletâ.

Abdomen petiolatum glabrum, *aculeo* in fœminis recondito.

Pedes longi, graciles, ſetoſi (*y*). *Femora* apophyſibus biarticulatis inſidentia (*z*). *Tibiarum* poſticarum ſpinulæ interiores uno latere pectinatæ (*a*). *Tarſi* quinque-articulati.

Color niger, abdominis *cingulo* ferrugineo.

Many of theſe characters are peculiar to this genus, particularly the form of the *roſtrum*, *maxillæ*, *collum*, and the pectinated *ſpinulæ* of the poſterior *tibiæ*. Even *colour*, ſo various in other genera, in this ſeems characteriſtic. To the above marks it might be added, that, in all the ſpecies I am going to deſcribe, the under ſides of the poſterior *tibiæ* are covered with a ſhort pale down.

CHARACTER ESSENTIALIS.

Roſtrum conicum inflexum, linguam bifidam exerens.

Antennæ filiformes *in omni ſexu*, articulis ſubquatuordecim.

(*w*) Tab. XIX. No. I. fig. 7.

(*x*) That part of the thorax which is behind the wings, I believe I ſhall name upon a future occaſion the *Metathorax*, as it is ſeparated in hymenopterous inſects both from the thorax and ſcutellum by a ſuture, and in deſcriptions often requires diſtinct notice.

(*y*) Fig. 8. (*z*) Fig. 8. a.

(*a*) Fig. 10. I conjecture that this pecten is ſerviceable to the inſects of this genus in the excavation of the little burrows, where they depoſit the animal to which they have committed an egg. When with their hind legs they diſſipate (ruſpando) the little heap of ſand from the mouth of the burrow, which they had ſcratched with their fore ones from its bottom, this pecten will prevent the grains from paſſing between this ſpine and the baſe of the tarſus, which is alſo pectinated, although leſs viſibly. Fig. 9. a.

Oculi

Oculi ovales.
Alæ planæ.
Aculeus reconditus.

These characters, I think, will sufficiently distinguish our *Ammophila* from those genera to which it is most nearly related. The direction of the rostrum in this genus, the form of the eyes, and the plane surface of the wings, clearly prove it to be distinct from *Vespa*. The bifid tongue, and the antennæ filiform in every sex (*b*), separate it from *Apis*. The direction and length of the rostrum, and the bifid tongue, divide it from *Sphex*. The same part in conjunction with the number of articulations, and form of the antennæ, prevent its being confounded with *Ichneumon*.

Synopsis Specierum.

1. *Vulgaris*. A. antennis tredecim-nodiis, frontis foveâ insertæ; abdominis petiolo elongato biarticulato, alis æquali.
2. *Affinis*. A. antennis tredecim-nodiis, frontis foveâ insertæ; abdominis petiolo uniarticulato; alis corpore brevioribus.
3. *Hirsuta*. A. antennis tredecim-nodiis; abdominis petiolo uniarticulato brevi; alis corpus æquantibus.
4. *Argentea*. A. antennis quatuordecim-nodiis; abdominis petiolo uniarticulato; alis corpore brevioribus (*c*).

(*b*) In *Apis* the antennæ of the males are filiform, while those of the other sex are subclavate.

(*c*) This genus, as far as I am acquainted with the species that compose it, offers to the Entomologist the singular felicity of forming a *Diagnosis Specierum*, from form, and the number and proportion of parts, without the necessity of having recourse either to pubescence, or colour, for that purpose.

1. AMMOPHILA *vulgaris.*

Common Sandwaſp.

A. antennis tredecim-nodiis, frontis foveâ inſertæ; abdominis petiolo elongato biarticulato, alis æquali.

Sphex ſabuloſa, nigra, hirta; abdominis petiolo biarticulato; ſegmento ſecundo tertioque ferrugineis.

Linn. Syſt. Nat. ed. Gmel. i. p. v. n. 1.
Fn. Suec. 1648.
Fab. Ent. Syſt. Em. ii. Sphex n. 1.
Villars Ent. Eur. iii. n. 1.
Scop. Carn. n. 770.
Schrank Enum. Inſ. Auſt. n. 768.
Müll. Linn. Nat. cl. v. p. 864.
Faun. Fridr. 627.

Ichneumon niger, abdomine fulvo, poſticè nigro, petiolo longiſſimo.

Geoffr. Hiſt. ab. des Inſ. ii. p. 349. n. 63.

Gueſpe Ichneumon noire, à antennes filiformes, et à filet fort long, dont le devant du ventre eſt roux, et les ailes fort courtes.

De Geer ii. p^tie ii. p. 822. n. 5. tab. 28. fig. 7.
Friſch. Inſ. ii. tab. 1. fig. 6, 7.
Sulz. Inſ. tab. 19. fig. 120.
Schæff. Icon. tab. 83. fig. 1.
Donovan iii. tab. 93. fig. 1.

Habitat in terrâ fabuloſâ, "*aprica*;" ubi canis inſtar pedibus anterioribus cuniculum fodit, larvamque phalænæ, vel araneam ſemimortuam in eo ſepelit, cui ovulum concredit: quo facto orificium terra claudit. *Linnæus.*

Caput punctulatum, ſubvilloſum villis ſordidi coloris.

Thorax ſordido-ſubvilloſus, linea intermedia longitudinali exaratus; *callis* (*d*), puncto ſub alas, et uno utrinque apud abdominis inſertionem, pilis decumbentibus ſericeo-argenteis ornatis. *Squamæ* nigræ (*e*).

Alæ ſubhyalinæ, apice obſcuriores, nervis nigricantibus, abdomine circitèr dimidio breviores, ſ. petiolum longitudine æquantes.

Abdomen clavatum; ſegmento primo filiformi nigro; ſecundo lineari, compreſſo, ferrugineo, puncto excavato utrinque notato; tertio campanulato ferrugineo; quarto nigro, baſi et infernè ferrugineo; reliquis nigris.

Long. corp. lin. 10.

β Variat minor, thoracis callis, lateribus, et poſticis pilis ſericeis deſtitutis; alis unicoloribus. An ſexus alter? forſan mas!

Long. corp. lin. 6.

This ſpecies, which is very common in Norfolk and Suffolk about ſandy banks of a ſunny expoſure; though rare, according to the ingenious Mr. Donovan, in the neighbourhood of London; is eaſily diſtinguiſhed from its congeners by the elongated *petiolus* of its abdomen, and its very ſhort wings. It may readily be known, even when flying, by the ſingular manner in which it carries its abdomen with the anus pointing upwards, ſo that it ſtands nearly at right-angles with that part of the thorax to which it is attached. The hiſtory of this inſect is very entertaining, as may be ſeen in De

(*d*) By the *Calli* I mean two little tubercles, one on each ſide of the anterior part of the thorax, to be met with in moſt hymenopterous inſects.

(*e*) The *Squamæ* are the minute ſemi-circular ſcales which cover and defend the root of the ſuperior wings, one over each.

Geer (*f*), whom I ſhall content myſelf with referring to; but I cannot reſiſt the temptation of tranſcribing from our great Ray, the very curious account he has given of ſome proceedings, of this very inſect, as I ſuſpect, which paſſed under his own obſervation. Theſe are his words (*g*): "Junii 22. an. 1667, è maximis hujus generi veſpam, ſpeciem jam non recordor, erucam viridem ſeipsâ triplo majorem trahentem vidi: quam poſtquàm, me præſente et ſpectante, ad unius circitèr perticæ noſtræ menſuræ, i. e. $15\frac{1}{2}$ pedes, deportâſſet; propè orificium cuniculi, quem ſibi prius in terrâ excavaverat, depoſuit: deinde pilulâ terreâ, quâ prædictum orificium obturaverat, remotâ, ipſa prius in cavernulam deſcendit, et poſt parvam inibi moram aſcendit iterùm, erucamque, quam juxta foramen depoſuerat, apprehendens, ſecum in cuniculum devehit, eâque inibi relictâ, mox rediit ſola, globuliſque terreis aſſumptis, unam poſt alteram in cuniculum devolvit, et per intervalla pedibus anterioribus ruſpando (ut cuniculi aut canes ſolent) pulverem retrorſùm in foramen conjecit; idemque opus repetit cum pulvere aut pilulis alternatim, donec cuniculus penitus oppletus eſſet, ipſa aliquotiès deſcendente ad terram (ut mihi videbatur) deprimendam et denſandam; ſemèl etiam atque iterùm in pinum adſtantem evolante, ad reſinam fortè petendam terræ conglutinandæ, et operi conſolidando. Repleto foramine, et cum terræ ſuperficie coæquato, ut aditus amplius non poſſit diſcerni, duo pini folia adjacentia aſſumit, et juxta cuniculi orificium depoſuit, ad locum (ut veriſimile eſt) ſignandum. Quis hæc non mihi miretur et ſtupeat? Quis hujuſmodi opera meræ machinæ poſſit attribuere?" (*h*)

Scopoli,

(*f*) De Geer, tom. ii. p^te^ ii. Mem. xiv.

(*g*) Raii Hiſt. Inſ. p. 254.

(*h*) I have been informed that the ingenious Mr. Curtis has written a hiſtory of this inſect,

Scopoli, as well as the great Linnæus, deſcribes the roſtrum as bivalve. I am loth to diſſent from ſuch high authorities; but I am convinced, from repeated examination, that the roſtrum in this and moſt hymenopterous inſects conſiſts of three valves beſides the tongue; two which cover its upper ſurface, and one that protects it beneath, to which it adheres (*i*).

I never was ſo fortunate as to meet with the variety of this inſect mentioned by Linnæus, *abdominis dorſo nigro*. It is poſſibly a diſtinct ſpecies. Villars, the ingenious author of the *Entomologia Europæa*, mentions another, *pedibus quatuor anticis fulvis*. I ſhould likewiſe think this more than a variety.

2. Ammophila *affinis*.

Contiguous Sandwaſp.

A. antennis tredecim-nodiis, frontis foveâ inſertæ; abdominis petiolo uniarticulato; alis corpore brevioribus.

Habitat rarior in ericetorum ſabuloſis.

Caput punctatum, nigro ſubvilloſum. *Maxillæ* nigræ faſciâ mediâ fuſcâ.

Thorax nitidus, punctatus, lineolis quinque (quarum una intermedia) impreſſus. *Squamæ* fuſcæ, poſticè rufæ.

Alæ teſtaceæ, abdomine tertiâ parte breviores.

Abdomen (petiolo excluſo) lanceolatum; ſegmento primo filiformi nigro, ſecundo campanulato nigro, apice ferrugineo; proximis duobus ferrugineis; reliquis nigris.

Long. corp. lin. 9.

inſect, which was compoſed for a Society of which he was a member, before the Linnæan was eſtabliſhed; what comes from the pen of ſo learned and accurate a Naturaliſt, muſt be extremely valuable, and therefore I cannot help indulging a wiſh that the public may be put in poſſeſſion of this curious and intereſting paper.

(*i*) Tab. xix. No. i. ii. iii. iv. v. fig. 1, 2.

I took

I took two ſpecimens of this inſect upon the ſunny bank of a ſand-pit in Martleſham Heath near Woodbridge, in the beginning of laſt September, which was the only time I ever met with it. It is ſufficiently diſtinguiſhed from the A. *vulgaris*, by the uniarticulate ſtalk of its abdomen, the black *villi* that are ſcattered over its head and trunk, the five impreſſed lines that are viſible upon the diſk of its thorax, and by its wings, which are proportionably longer, and of a different hue: the maxillæ alſo are ſhorter, and have an obſcure reddiſh brown *faſcia* acroſs their middle; and the whole inſect is thicker in proportion. I do not find this ſpecies deſcribed in any author that I have an opportunity of conſulting.

3. AMMOPHILA *hirſuta*.

Hairy Sandwaſp.

A. antennis tredecim-nodiis; abdominis petiolo uniarticulato brevi; alis corpus æquantibus.

Sphex arenaria hirta nigra, abdominis petiolo uniarticulato, ſegmento ſecundo tertioque rufis; alis longitudine corporis.
Fab. Ent. Syſt. Em. ii. n. 2.
Linn. Syſt. Nat. ed. Gmel. i. p. v. Sphex 22.
Villars Ent. Eur. iii. — — — 7.

Sphex hirſuta nigra, capite thoraceque pubeſcentibus, abdomine anticè fulvo.—*Scop. Ent. Car.* n. 772.

—— nigra hirta, abdominis petiolo uniarticulato; abdomine medio ferrugineo; tibiis omnibus ſpinoſis.
Schrank Enum. Inſ. Auſt. n. 769.
Linn. Syſt. Nat. ed. Gmel. i. p. v. n. 53.
Villars Ent. Eur. iii. n. 16.
Capta ſemèl in foſſæ ripâ ſabuloſâ.

Caput

Caput magnum, punctulatum, atro-villosum. *Maxillæ* longitudine capitis valdè minaces. *Frons* planiuscula.

Thorax et pectus atro-villosa. *Squamæ* nigræ.

Alæ longitudine corporis subhyalinæ, apice nigræ, venis ferrugineis, costâ fuscâ.

Abdomen nigrum, lanceolato-ovatum; petiolo brevi villoso; segmento secundo, tertio, quartique basi, rubello-ferrugineis.

Pedes postici, abdomine dimidio longiores. *Tarsi* setis valdè asperi.

Long. corp. lin. 8.—Alt. Sex ♀ lin. 6¼.

The larger specimen of this insect I purchased, as English, at a shop in Piccadilly; but the small one (which I believe to be the male) I took upon the sunny bank of a sandy ditch near Martlesham Heath, at the same time with A. *affinis*. I think that I have likewise seen it in the rich cabinet of our Secretary, my tutor in Entomology, and to whose liberality mine is indebted for some of its most valuable contents.

This insect is beyond a doubt the *Sphex arenaria* of Fabricius, and likewise the S. *hirsuta* of Scopoli and Schrank; although Gmelin and Villars make them different. It is clearly distinct from the two preceding species. Its wings of the length of the body, tipped with a black *nebula*; its abdomen of a figure inclining to ovate; its large head very villose, as well as its trunk; its maxillæ threatening with an immense acumen, plainly prove this. It is larger also in all its parts; the band which surrounds its abdomen is of a brighter red; the legs are much more bristly, especially the tarsi; and the interior spine, which arms the apex of each of the posterior tibiæ, is more conspicuously pectinated.

4. Ammo-

4. AMMOPHILA *argentea.*

Silver-fronted Sandwaſp.

A. antennis quatuordecim-nodiis; abdominis petiolo uniarticulato; alis corpore brevioribus.

Caput nigro-villoſum. *Maxillæ* acumine fuſco. *Antennæ* thoracis ferè longitudine. *Frons* planiuſcula, infrà antennas pilis denſis decumbentibus argenteo-nitidiſſimis, niſi à tergo vix conſpicuis, tecta.

Thorax anguſtus; ſubvilloſus uti pectus villis certo ſitu argenteis. *Squamæ* nigræ.

Alæ ſubhyalinæ, apice obſcuriores, nervis ferrugineis; abdomine dimidio ferè breviores.

Abdomen clavatum, ſegmento primo filiformi nigro; ſecundo campanulato tertioque rufis; quarto rufo, apice nigro; reliquis nigris.

Pedes ſetulis brevibus aſperi.

Long. corp. lin. $5\frac{2}{3}$.

Semèl capta, ſed ubi et quando neſcio.

At firſt ſight one would take this ſpecies for A. *vulgaris* β, but upon a nearer inſpection it will be found very diſtinct. The front has no *fovea*, and from the antennæ downwards is quite covered with a coat of ſilver pile, which, when the light falls upon it from above, gives it a very glittering appearance. From the midſt of this pile other longer black hairs, thinly ſcattered, ariſe. The antennæ conſiſt of fourteen joints, counting the minute one at their baſe. The *villi* of the trunk glitter in certain lights, but not ſo much as the pile on the front: the footſtalk of the abdomen conſiſts of a ſingle

single joint, its belt is of a paler red, and the bristles of the legs are very short.

I have subjoined a sketch which exhibits a comparative view of the *rostra* and *maxillæ* in *Ammophila*, *Sphex*, *Vespa*, and *Apis*; which will, I hope, though rudely executed, (for I cannot say "*anch' io son pittore*,") afford a tolerable idea of the marks and characters that separate these genera.

I have no doubt of there being several foreign insects, besides A. *ichneumonea*, that belong to this genus (*k*): but as I have not at present an opportunity of examining the rich cabinets in the metropolis, I must defer saying any thing upon them till a future opportunity.

EXPLANATION OF TAB. XIX.

No. I.

The rostrum, maxilla, and other parts of an *Ammophila* magnified.

Fig. 1. The outside of one of the upper valves of the rostrum, which is semisagittate. (a) Its feeler of six joints.

Fig. 2. The under-side of the rostrum exhibiting (a) the inside of one of the upper valves. (b) Its feeler. (c) The under valve. (d d) Its aristæ. (e) One of its feelers of four joints. (f) The tongue.

Fig. 3. The under-side of the tongue viewed by itself, exhibiting (a) its bifid *clava*. (b) The orifice of its tube. (c) Its stalk.

Fig. 4. The under-side of the head, to shew the direction of the rostrum when at rest. (a) The apex of the rostrum. (b) The neck.

(*k*) The insect figured by De Geer, Tab. xxxii. fig. 17. belongs probably to this genus.

Fig. 5. A maxilla. (a) The inner tooth, generally acute. (b) The intermediate one, truncated. (c) The exterior one, acuminated. This acumen, croſſing that of the other maxilla, forms the forceps.

Fig. 6. The antennæ, conſiſting of thirteen joints. (a) The firſt joint. (b) The ſecond. (c) The third.

Fig. 7. (a) The neck. (b) The back part of the head. (c) The fore part of the thorax.

Fig. 8. A hind leg. (a) The apophyſis, conſiſting of two joints. (b) The thigh. (c) The tibia. (d) The tarſus, conſiſting of five joints.

Fig. 9. The firſt joint of the tarſus. (a) The pecten at its baſe.

Fig. 10. The interior pectinated ſpine at the apex of the poſterior tibia.

No. II.

The roſtrum and maxilla of a *Sphex* magnified.

Fig. 1. The outſide of one of the upper valves, ſhort and rounded, and hairy at the top. (a) Its feeler of ſix joints, the intermediate ones the largeſt.

Fig. 2. The under-ſide of the roſtrum. (a) The inſide of the upper valve. (b) Its feeler. (c) The under valve. (d d) Its minute ariſtæ. (e) Its feeler, of four joints. (f) The tongue, ſhort and dilated at the apex.

Fig. 3. The upper ſide of the tongue, on which it appears rather emarginate.

Fig. 4. A maxilla.

Fig. 5. The inſide of a maxilla, to ſhew the two obſolete teeth at the apex (a).

No. III.

The roſtrum and maxilla of a *Veſpa* magnified.

Fig. 1. The outſide of one of the upper valves, ſhort, hairy above the feeler, rounded at the top; below the feeler ſwelling out externally into the ſegment of a circle. (a) The feeler of ſix joints of nearly equal ſize.

Fig. 2. The under-ſide of the roſtrum. (a) The inſide of the upper valve. (b) Its feeler. (c) The under valve. (d) A fovea in its diſk. (e e) Two proceſſes analogous to the ariſtæ in No. I. and No. II. but tipped on this ſide with a callous point. (f) One of its feelers, of four joints. (g) The tongue, obcordate and bifid. (h h) Callous points at the tip of each lobe, obſervable on the under ſide only.

Fig. 3. The upper ſide of the tongue, tranſverſely ſtriated.

Fig. 4. A maxilla. (a) Two ſmall acute teeth. (b) One tooth large and truncated.

No. IV.

The roſtrum and maxilla of an *Apis*, *roſtro inflexo*, magnified.

Fig. 1. The outſide of one of the upper valves, lanceolate with a ſubinvolute acumen, and laterally emarginate. (a) The feeler, conſiſting of a ſingle joint.

Fig. 2. The under-ſide of the roſtrum. (a) The inſide of the upper valve. (b) The under valve. (c c) Its ariſtæ. (d d) The feelers, one at the apex of each ariſta, conſiſting of two joints. (e) Its linear tongue, ſubacute.

Fig. 3. The upper ſide of the tongue. (a) The top of it downy. (b) The lower part ſtriated.

Fig. 4. The maxilla, armed with two obtuſe teeth at its apex. (a) The interior tooth ſmall. (b) The exterior very large. N. B. The black lines are deſigned to repreſent the *ſulci*, which are drawn upon its exterior ſurface.

No. V.

Roſtrum and maxilla of an *Apis*, *roſtro reflexo*, magnified.

Fig. 1. Outſide of one of the upper valves, cultriform and acute. (a) Feeler of ſix joints.

Fig. 2. Under-ſide of the roſtrum. (a) Inſide of the upper valve. (b) Its feeler. (c) The under valve. (d) One of its feelers of four joints, the three laſt forming an angle with the firſt (*l*). (e) The tongue.

Fig. 3. The tongue ſeparate, linear-lanceolate, and very acute.

Fig. 4. The maxilla, armed at its apex with two unequal teeth, of which the interior is the ſhorteſt.

(*l*) With my pocket lens I could diſcover no part analogous to the *ariſtæ*, upon the under valve of this roſtrum.

XVIII. *The*